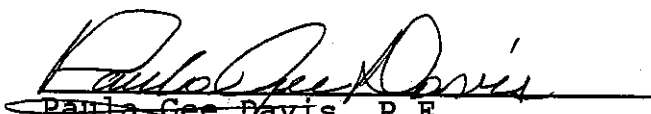
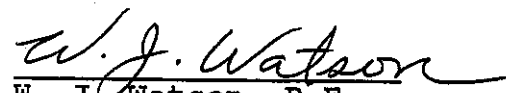


FEASIBILITY STUDY


Durham
SR 1321 (Hillandale Road)
from Club Boulevard to I-85
Durham County
U-2708

Prepared by
Program Development Branch
Division of Highways
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I. GENERAL DESCRIPTION

This is a feasibility study to widen Hillandale Road (SR 1321) from Club Boulevard to I-85 in Durham (See Figure 1). A four lane, median divided roadway is proposed. The project length is 0.9 miles. The total estimated cost for improvements is \$2,530,000.

This is not an exhaustive environmental or design investigation but a preliminary study to define feasible project alternatives and determine estimated right-of-way and construction costs for these alternatives.

II. NEED FOR PROJECT

The purpose of this project is to provide additional traffic capacity on Hillandale Road (SR 1321). The project was requested by the Durham County Chamber of Commerce, and the City of Durham. Presently Hillandale Road is a 2-lane facility with 20 feet of pavement and grassed shoulders of variable width on a 60 foot right-of-way. An existing traffic signal controls the T-intersection of Club Boulevard and Hillandale Road located at the southern end of the project. Hillandale Road south of Club Boulevard is a 5 lane curb and gutter section. The ramps to I-85 at the northern project terminus are signalized. The replacement of Hillandale Road bridge #130 with a six lane bridge over I-85 is part of TIP Project I-306. The bridge is currently 44 feet wide and provides 4 travel lanes. The replacement bridge will have 2 through lanes and 1 full length turn lane in each direction.

Ellerbe Creek crosses Hillandale Road in the area of the golf course. The arch culvert at Ellerbe Creek has a horizontal clearance of 25 feet and a sufficiency rating of 79.5% and will be lengthened when the road is widened.

Hillandale Road (SR 1321) at this location is classified as a Urban Minor Arterial in the Statewide Functional Classification System. It is also a part of the Federal Aid Urban system (5334). The Durham Urban Area Thoroughfare Plan of March 24, 1980 shows this portion of Hillandale Road as a major thoroughfare.

Land use is mainly residential with some small businesses at the northern and southern ends of the road. A privately owned golf course which is open to the public is located on both sides of Hillandale Road, generally between the City of Durham Water Plant and Indian Trail. Golf carts currently cross Hillandale Road at grade in three locations; immediately north and south of Sprunt Avenue, and about midway between Sprunt Avenue and Indian Trail.

The Average Daily Traffic (ADT) for the years 1990 and 2010 are estimated to be 12,000 vehicles per day (vpd) and 20,700 vpd respectively. Capacity analyses indicate that Hillandale road is currently operating at level of service E. With the proposed improvements Hillandale Road is estimated to operate at level of service D in the design year, 2010.

Accident records from the past three years show 69 accidents at this location. The accident rate for Hillandale Road is 729.39 accidents per 100 million vehicle miles (Acc/100 MVM) compared to a statewide average of 382.0 Acc/100 MVM for all urban secondary routes in 1989.

Of the 69 recorded accidents for the past three years, rear-end collisions from slow or stopped conditions accounted for 27.5% of the accidents. Left turn movements from the same road or across traffic accounted for 31.8% of the accidents. These are accidents that would be expected from a road operating at Level of Service E and nearing capacity. The improvements that will upgrade this facility will reduce the potential for these types of accidents.

III. RECOMMENDATIONS

It is recommended to widen Hillandale Road between Club Boulevard and I-85, a distance of 0.9 miles. A four-lane roadway with two travel lanes in each direction, divided by a 16-foot raised median, is proposed. It is recommended that the two lane travel ways be approximately 29.5 feet face to face of curbs with a 12-foot inside lane and a 14-foot outside lane to accommodate bicycle traffic. Eight foot berms are proposed. The raised, planted median will help retain the character of the neighborhood and should be provided if the City of Durham agrees to maintain it. Left-turn bays at intersections will be provided on Hillandale Road. A 100 foot right-of-way will be required, generally centered on the existing roadway centerline.

The total cost of the recommended 4-lane facility with median is:

R/W Cost	: \$ 1,040,000
Construction Cost	: 1,490,000

Total Cost: \$ 2,530,000

Large water mains are located in the area, therefore utility relocation cost will be high.

IV. OTHER STUDIED ALTERNATIVES

A 5-lane curb and gutter (68 feet face to face) typical cross section with 14 foot outside lanes was also considered. This alternative costs \$90,000 less than the recommended improvement, but is not proposed because the median section better retains the character of the neighborhood and the location of the golf course, water plant and lake reduce the necessity for mid block turns along much of the project.

The cost for the 5-Lane Curb and Gutter facility is:

R/W Cost	: \$ 1,040,000
Construction Cost	: 1,400,000

Total Cost: \$ 2,440,000

V. OTHER COMMENTS

An initial environmental screening has been completed and no historic/archaeological sites were identified in the area. Wetlands, parks and endangered species will not be affected by this project. Placing fill material in Ellerbe Creek (such as activities associated with extension of the arch culvert) will likely be permitted under a Corps of Engineers Nationwide Permit.

A neighborhood coalition exists and has requested "meaningful and extensive public involvement" in the planning and design phases of this facility.

The golf course location presents a potential safety problem since Hillandale Road bisects the course. Currently golf carts cross Hillandale Road at three locations. At the request of the City of Durham, a box culvert to serve as a pedestrian-golf cart underpass was investigated. The underpass is not recommended because of its high cost (\$200,000).

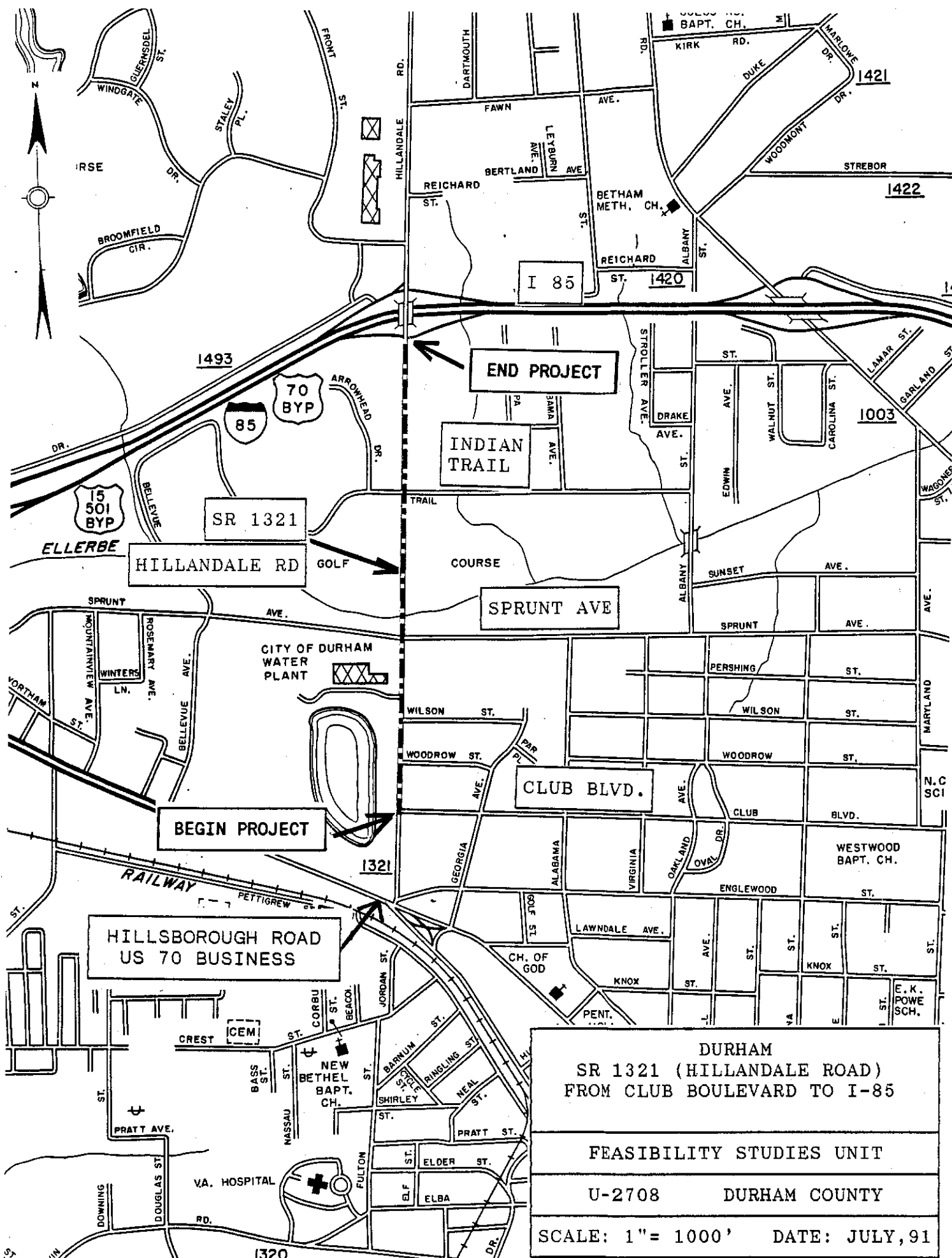


FIGURE 1